ENVIRONMENTAL ASSESSMENT

SECTION 404(b)(1) EVALUATION

AND

FINDING OF NO SIGNIFICANT IMPACT

INTAKE WEIR CONSTRUCTION

EDWARD MACDOWELL DAM

WEST PETERBOROUGH, NEW HAMPSHIRE

PREPARED BY
ELIZABETH A. PARFENUK
BIOLOGIST

MARCH 1985

NEW ENGLAND DIVISION
ARMY CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)* Intake Weir Construction Edward MacDowell Dam, Petersborough, New Hampshire Environmental Assessment, Section 404(b)(1) Evaluation, and Finding of No Significant Impact.	5. TYPE OF REPORT & PERIOD COVERED Environmental Assessment. 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Elizabeth A. Parfenuk U.S. Army Corps of Engineers New England Division	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Department of the Army, Corps of Engineers, New England Division, Planning, Impact Analysis Branch 424 Trapelo Road, Waltham, MA 02254-9149	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army, Corps of Engineers, New England Division, Planning, Impact Analysis Branch 424 Trapelo Road, Waltham, MA 02254-9149	12. REPORT DATE March 1985 13. NUMBER OF PAGES 30
14. MONITORING AGENCY NAME & ADDRESS*(if different from Controlling Office)*	15. SECURITY CLASS. *(of this report)* Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Approval for Public Release: Distribution Unlimited.

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Environmental Assessment
Finding of No Significant Impact
Section 404(b)(1)Evaluation

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

The proposed project involves construction of a concrete intake weir with wooden stop logs. No dredging will take place. The weir will be placed on and adjacent to an existing concrete slab and wall. To avoid adverse water quality impacts, the MacDowell Lake will be drained for two to ten weeks during the construction period. Incidental work includes construction of a temporary sand bag dike to further protect water qualtiy. The project is scheduled for construction between July and September of 1985.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

TABLE OF CONTENTS

Environmental Assessment		Page Number
I.	Introduction and Project History	1
II.	Project Purpose and Need	2
III.	Project Description	2
IV.	Project Alternatives	2
V.	Affected Environment	2
	A. General	2
	B. Water Quality	3
	C. Terrestrial Resources	4
	D. Aquatic Resources	4
	E. Threatened and Endangered Species	5
	F. Cultural Resources	5
VI.	Environmental Consequences	5
	A. General	5
	B. Water Quality	5
	C. Terrestrial Resources	6
	D. Aquatic Resources	6
	E. Threatened and Endangered Species	6
	F. Cultural Resources	7
VII.	Mitigation	7
VIII.	Coordination	7
IX.	Compliance Table	8
X.	References	10

Figures	Following Page
Figure 1 - Location Map	2
Figure 2 - Project Map	2

Appendicies	Appendix Number
Section 404(b)(1) Evaluation (Short Form)	1
Finding of No Significant Impact	2
Pertinent Correspondence	3

I. Introduction and Project History

The New England Division of the United States Army Corps of Engineers has reviewed environmental consequences for a proposed intake weir construction project located on the Nubanusit Brook. This project is needed to regulate flow at the Corps' owned and regulated Edward MacDowell Dam located in West Peterborough, New Hampshire. This document has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA), and all appropriate environmental laws, regulations, and executive orders. This document contains an assessment of the potential environmental impacts of the proposed action, a Section 404(b)(1) Evaluation (Short Form), and a Finding of No Significant Impact (FONSI).

The Edward MacDowell Reservoir is located primarily within the two townships of Peterborough and Hancock, with a small portion also in Harrisville and Dublin, New Hampshire. Peterborough and Hancock are considered rural areas, having populations of 4,900 and 1,200 respectively (1980 census). The countryside is either forested hills or rolling pastures, except for the town centers.

The climate of the area is variable with an average annual temperature of approximately 45°F. The average monthly temperature varies from 70° in July to about 20° in January. The average annual precipitation is about 44 inches with annual snowfall amounting to 70 inches. Average water content of the snow cover amounts to more than eight inches per year. Spring melting generally occurs in late March and April. The growing season averages 160 days per year.

The area was basically industrial in the middle of the late 19th century, owing to readily available water power. Due to past floods and fires and changes in labor markets, the local economy now operates around tourism and recreation. The project is located approximately at the crossroads of two major state highways, 101 and 137. Because of the area's rustic countryside, it is now a haven for artists, photographers, and retirees.

The labor force is comprised of three major categories. Over a third occupy professional or technical positions. Another third are employed in manufacturing mostly durable goods. The remaining portion of the labor force is involved with service type jobs, farming being virtually non-existent. It is important to note that most of the people involved in manufacturing commute since only a few small industries still exist in the project area. People in the project area enjoy an above average standard of living.

The area is very attractive to the upper middle income bracket and artists. New Hampshire's low State taxes attract many second home buyers who earn their income outside of the State, especially in Massachusetts. The Edward MacDowell Artists Colony attracts many artists on a live-in apprenticeship basis.

II. Project Purpose and Need

This project is being implemented to aid in better controlling flow through the dam gates. With the intake weir in place, a reduction in the number of hours required to operate the gates will be achieved, thus reducing operating costs and extending the life expectancy of the operating equipment.

III. Project Description

Construction of a concrete intake weir with wooden stop logs has been proposed for this project. The weir will be used to regulate flow through the dam gates. The MacDowell Lake will be drained for two to ten weeks during construction of the weir. Incidental work includes construction of a temporary water diversion system; sand bags will be used to control and channel flow during construction of the weir. This system will allow the discharge of all normal flows entering the reservoir. Roughly 25 yards of concrete will be used to construct the weir, and less than 10 yards of clean material will be used to fill the sand bags. The project is scheduled for construction between July and September of 1985.

The project is located in West Peterborough, New Hampshire off of Route 101A. The intake weir is to be constructed just outside of the gate house on an existing concrete slab found lying adjacent to gate #1. See Figures 1 and 2 for project location, general and specific, found on the next two pages.

IV. Project Alternatives

A no action project alternative would not produce the desired results of decreasing the amount of time necessary to regulate flow through the dam which consequently lessens the dam's operating costs. Currently, the gates are changed three times a day. With the weir in place, the gates may only have to be controlled once a day.

Use of a cofferdam during construction was suggested, but determined to be more expensive than the cost of the project itself. Therefore, it was decided to drain the lake and use a sand bag dike to control water flow through the construction area.

V. Affected Environment

A. General

Developed recreational facilities at MacDowell are limited to a small day use picnic area at the western end of the dam. These facilities are maintained and operated by the Corps of Engineers. The MacDowell Lake has not been developed for active recreation due to its shallowness and small size. Other forms of recreation such as camping grounds or playing fields

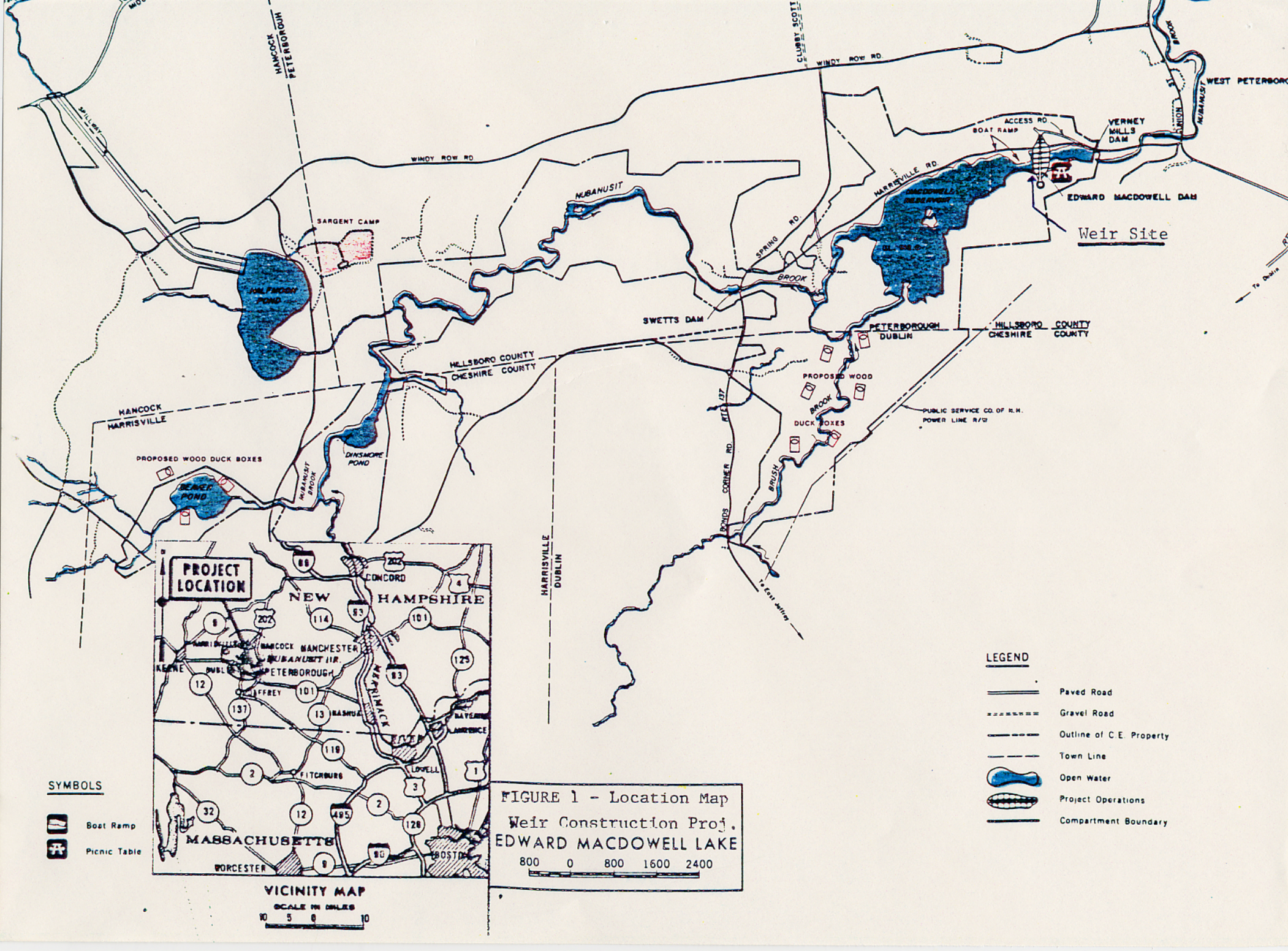

FIGURE 1 - Location Map
Weir Construction Proj.
EDWARD MACDOWELL LAKE

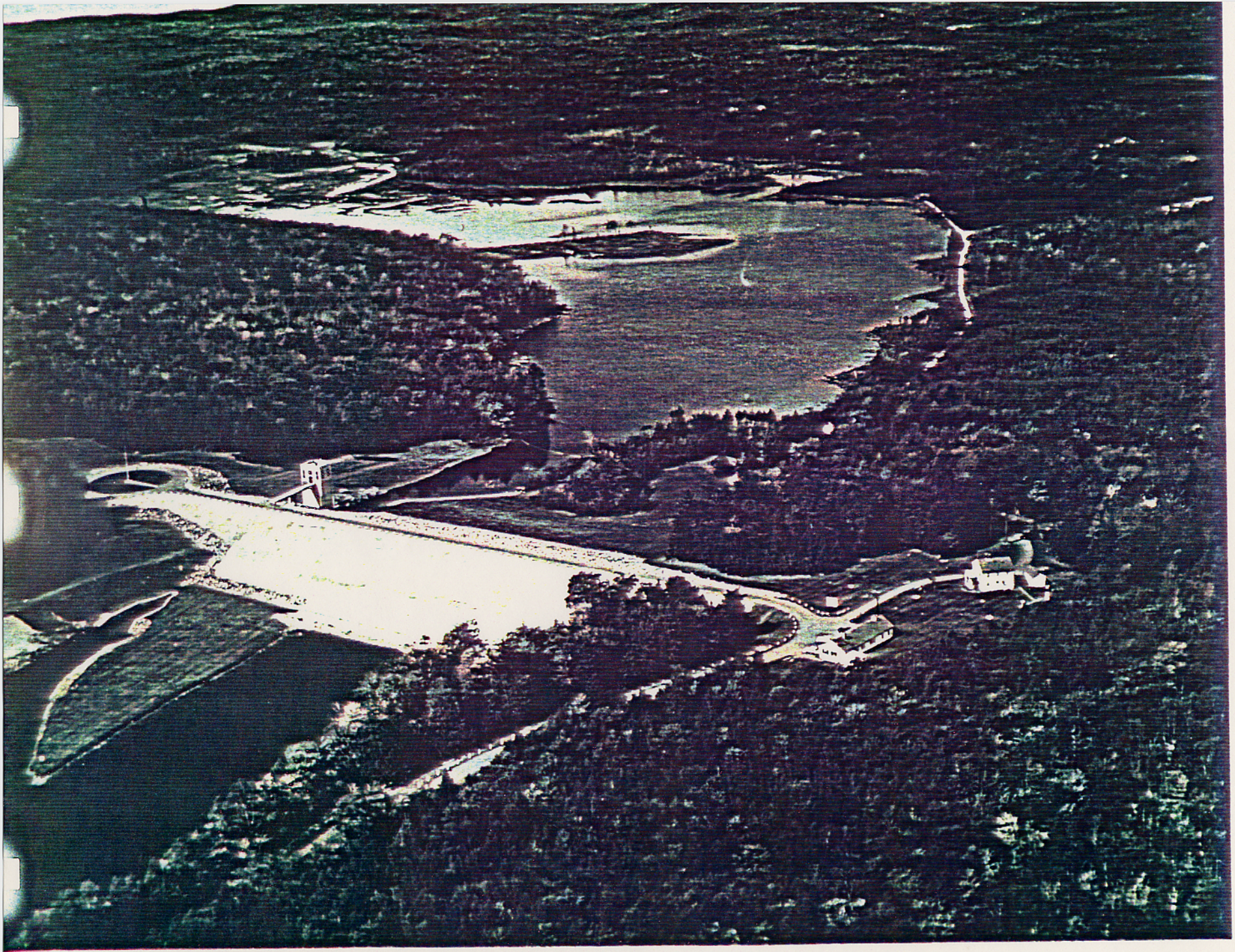

FIGURE 2 -

Project
Location

Weir Construc
tion Project

Edward Mac-
Dowell Lake

wet soil, and steep, rocky slopes. The primary use of the project lands is for passive recreation activities such as hunting, fishing, boating, hiking, and snow skiing.

The project is located adjacent to the Boston University Human Environment Institute at Sargent Camp. The camp sponsors environmental education programs and utilizes the lands and waters of the MacDowell project area for hiking, canoeing, snow skiing, and nature enterpretation.

B. Water Quality

The Nubanusit Brook and its tributaries are rated class B by the New Hampshire Water Supply and Pollution Control Commission. Class B waters have high aesthetic value and are acceptable for swimming and other recreation, fish habitat, and after adequate treatment for use as water supplies. No disposal of sewage or wastes are allowed in these waters unless adequate treatment is performed.

Technical requirements for class B waters include no objectionable physical characteristics; dissolved oxygen concentration of not less than 75 percent of saturation, nor less than 6 ppm in cold water fisheries, unless naturally occurring; pH in the range of 6.5 - 8.0, or as naturally occurs; no more than 240 coliform bacteria per 100 milliliters; and a maximum turbidity of 10 standard turbidity units in cold water fisheries or 25 standard turbidity units in warm water fisheries, unless occurring naturally. Any temperature increase associated with the discharge of treated sewage, waste, or cooling water cannot interfere with the uses mentioned above.

There are no significant point-source discharges upstream of the MacDowell Lake. Dissolved oxygen levels both in Nubanusit Brook and MacDowell Lake are consistently high. Characteristics of these waters are low levels of coliform bacteria and turbidity. Some treatment would be required, however, for water use.

Natural conditions such as swamps and marshes along some tributaries to the Nubanusit contribute to low pH levels and high iron, mercury, and color concentrations. These low pH levels are also fueled by acid rain runoff, and frequently violate state criteria. This is not a health problem in a public water supply, but may cause corrosion problems. Although high color, iron, and mercury levels at MacDowell Lake are rare, taste and laundry-staining problems can result from high iron levels, but no health hazard is evident. High color concentrations are unappealing to water consumers, but not harmful. All three concentrations can be reduced by standard treatment processes.

C. Terrestrial Resources

The terrestrial environment consists primarily of an oak-pine forest. The shoreline has a shallow slope except in the southwestern portion adjacent to the dam. Common species found in the area include White Pine (Pinus strobus), Red Oak (Quercus rubra), White Ash (Fraxinus americana), Black Birch (Betula lenta), Red Maple (Acer rubrum), Sugar Maple (A. saccharum), Eastern Hemlock (Tsuga canadensis), Aspen (Populus spp.), and Beech (Fagus grandifolia).

The New Hampshire Fish and Game Department has focused its attention on waterfowl habitat maintenance. Wood Duck (Aix sponsa) is the most prevalent species, but Black Duck (Anas rubripes) and Mallard (Anas platyrhynchos) also exist. Most waterfowl nest between April and June. Also part of the waterfowl and upland bird community are Canada Goose (Branta canadensis), Ruffled Grouse (Bonasa umbellus), and Woodcock (Philohela minor). Occasionally Great Blue Heron (Ardea herodias), Osprey (Pandion haliaetus), and Red-Shouldered Hawk (Buteo lineatus) can be sighted in the area.

Wildlife present in the area include Beaver (Castor canadensis), Deer (Odocoileus spp.), Red Fox (Vulpes fulva), Snoeshow Hare (Lepus americanus), New England Cottontail Rabbit (Sylvilagus transitionalis), Muskrat (Ondatra zibethica), Porcupine (Erethizon dorsatum), Raccoon (Procyon lotor), Striped Skunk (Mephitis mephitis), Eastern Gray Squirrel (Sciurus carolinensis), Woodchuck (Marmota monax), River Otter (Lutra canadensis), and Fishers (Martes pennanti).

D. Aquatic Resources

The aquatic environment of the proposed project area consists mainly of the MacDowell Lake and the Nubanusit Brook which interacts with the Brush and Stanley Brooks found in the Merrimack River Basin. Also involved are Halfmoon Pond, Dinsmore Pond, and Beaver Pond.

MacDowell Lake is a borderline mesotrophic - oligotrophic impoundment with a hydraulic residence time of one to three days under normal summer flow conditions. Under minimum flow conditions, the hydraulic residence time increases to two to three weeks. Low nutrient levels and short hydraulic detention time indicate protection from algal blooms. Temperatures in the Brook are frequently higher than the optimum (68° F) to support a good cold water fishery as desired, but rarely exceed the 85° F maximum to support a warm water fishery.

Feeder streams to the lake do not support any salmonid populations due in part to the poor riffle-pool configuration. The fishery in the impoundment is a moderate to dying warm water fishery constrained by shallow water depths. Species present include Yellow Perch (Perca flavescens), White Sucker (Catostomus commersoni), Pumpkinseed (Lepomis gibbosus), Bluegill (L. macrochirus), Carp (Cyprinus carpio), Brown

Bullhead or Hornpout (Ictalarus nebulosus), Golden Shiner (Notemigonus crysoleucas), Smallmouth Bass (Micropeterus salmoides), Chain Pickerel (Esox niger), and Crayfish (Eualus and Lebbeus species). Fishing pressure is moderate. According to the New Hampshire Fish and Game Department, periodically in the past Trout (Salmo and Salvelinus species) have been stocked downstream by the State, and it continues to stock Bass.

Aquatic plants are common in the shallows, margins, and upper section of the impoundment. Species found include Pondweed (Potamogeton spp.), Duckweed (Lemna spp.), Pickerelweed (Pontederia cordata), and Waterlilies (Nymphaea odorata). A large portion of the surrounding area is a fresh water marsh.

E. Threatened and Endangered Species

According to the Fish and Wildlife Service, only transient individuals of Federally listed threatened and endangered species may exist in the proposed project area. The State of New Hampshire does not list any threatened and endangered species in the proposed project area.

F. Cultural Resources

Since the pool area of MacDowell Lake was stripped and grubbed at the time of dam construction in 1950, and no change in elevation would result from weir installation, no effect on significant historic or archaeological resources is anticipated due to this project.

VI. Environmental Consequences

A. General

The project will not have any affect on recreational activities now existing around the Edward MacDowell Dam area. Noise and air pollution from construction activities will be minimal and of short duration. A maximum of ten weeks has been set for project construction.

B. Water Quality

The water in the MacDowell Lake will be drained (approximately 815 acre feet or a surface area of 100 acres) and any residual water will be diverted with sand bags during construction of the weir. This diversion will allow construction of the weir to take place without interruption. Water quality will not be adversely affected by construction materials since the area will be dewatered. No dredging will take place. The weir will be placed on existing concrete slab located outside of dam gate #1; the slab is adjacent to an existing concrete wall. There are no known contaminants in the proposed project area. The reservoir is currently seven feet deep at the gate house and roughly four feet deep in the main body of the pool.

Slight turbidity may result from the draining process due to the irritation of fine silts and clays that may exist in the reservoir's substrate. This turbidity will be temporary and minimal since a slow draining procedure will be employed over the course of three days instead of one day.

C. Terrestrial Resources

A large intermittent area of wetland vegetation surrounds the MacDowell Lake. After careful consideration, it was agreed that draining the impoundment would produce many beneficial results and few, if any, undesired impacts.

According to the New Hampshire Fish and Game Department, draining the pool late in the summer, and/or early fall would provide adequate protection to resident nesting waterfowl and other species. In addition, this action would provide waterfowl with a greater area of exposed mudflats. Mudflats constitute excellent feeding grounds for these birds. This time frame was also selected to avoid the onset of duck hunting in October.

The lake was last drained in 1957. Other lakes, such as one in Westborough, Massachusetts (which is not a Corps reservoir), are purposely drained for several months during the summer in order to enhance feeding grounds for waterfowl and improve wetland vegetation rejuvenation. New Hampshire Fish and Game was also familiar with such endeavors where this action is common practice to help decrease acidic conditions, aerate the soil, and promote new plant growth.

D. Aquatic Resources

Construction of the weir will lessen the pool's fluctuations, thus producing a more stable aquatic environment. This will create a more favorable setting for the desired cold water fishery although shallow water depth still puts a restraint on this occurrence. Currently, a warm water fishery exists in the impoundment behind the dam. Draining the lake will destory some of the unwanted warm water fish. The New Hampshire Fish and Game Department plans to stock bass and pickerel in 1986 which will help fish populations in MacDowell Lake to recover. (See the New Hampshire Fish and Game Department letter in Appendix 3.)

The time frame selected will reduce possible impacts to fish spawnings. Bass spawn before this time period, while trout spawn after this span. Early in the planning process the 15 July to 15 September date was coordinated with the New Hampshire Fish and Game Department.

E. Threatened and Endangered Species

Since no Federally listed threatened or endangered species continually live in the proposed project area, there will be no impact on such species. The area will not be altered significantly to affect any

transient individuals. There are no State listed threatened or endangered species in the proposed project area. (See letters in Appendix 3, the anticipated hydropower project referred to in the letter from the Fish and Wildlife Service was used as coordination for this project also, since the proposed project areas are identical.)

F. Cultural Resources

According to the Department of Resources and Economic Development no effect on cultural resources is anticipated in the proposed project area. (Based on communication between our staff archaeologist and the Department of Resources and Economic Development; see letter in Appendix 3.)

VII. Mitigation

During a site visit, New Hampshire Fish and Game suggested that possible mitigation/improvement measures could take place while the lake is drained. Possible seedings of Japanese Millet (Panicum spp.) or Smartweed (Polygonum spp.) could be performed by New Hampshire Fish and Game to provide a source of waterfowl food. This agency will be contacted when construction begins to provide enhancement work if able. (See letter in Appendix 3.)

New Hampshire Fish and Game made an additional suggestion to help avoid siltation problems that may adversely affect water quality during reservoir drawdown. It was recommended that hay bales be used during the draining to trap fine silts and clays. Escape of these sediments might allow the release of any possible contaminants not yet discovered. To compensate, siltation will be regulated by a slow draining process to be spread over three consecutive days. This should lessen any adverse impacts since associated turbidity will be curbed sufficiently through a prolonged dewatering time.

VIII. Coordination

This project has been coordinated by oral or written communication with the following interests/agencies:

Mr. Bill Ingham, New Hampshire Fish and Game Department, Concord, New Hampshire.

U.S. Fish and Wildlife Service, Ecological Services, Concord, New Hampshire.

Department of Resources and Economic Development, Concord, New Hampshire.

Environmental Protection Agency, Office of Government Relations and Environmental Review, Boston, Massachusetts

IX. Compliance with Environmental Protection Statues and Executive Orders

Statutes

1. Archaeological and Historic Preservation Act, as amended, 16 U.S.C. 469 et seq.

2. Clean Air Act, as amended, 42 U.S.C. 7401 et seq.

3. Clean Water Act (Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.

4. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 et seq.

5. Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.

6. Estuary Protection Act, 16 U.S.C. 1221 et seq.

7. Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq.

8. Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.

9. Land and Water Conservation Fund Act of 1965, as amended, 16 U.S.C. 470-4 et seq.

10. Marine Protection, Research, and Sanctuaries Act of 1972, as amended, 33 U.S.C. 1401 et seq.

11. National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq.

12. National Environmental Policy Act of 1969, as amended, 42 U.S.C 432 et seq.

13. Rivers and Harbors Appropriation Act of 1899, as amended, 33 U.S.C. 401 et seq.

14. Watershed Protection and Flood Protection Act, as amended, 16 U.S.C. 1001 et seq.

15. Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271 et seq.

Executive Orders

1. Executive Order 11988, Floodplain Management, 24 May 1977.

2. Executive Order 11990, Protection of Wetlands, 24 May 1977.

3. Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 4 January 1979.

Compliance With Statutes

1. No change in elevation will result from weir construction. Any cultural resources present in the proposed project area will not be impacted. (See letter in Appendix 3.)

2. Submission of this report to the Regional Administrator of the Environmental Protection Agency (EPA) for review constitutes compliance with this Act.

3. No significant impact to the waters of this project are anticipated. A Section 404(b)(1) Evaluation (Short Form) is attached. Water Quality Certification has been requested.

4. Not applicable.

5. Coordination with the U.S. Fish and Wildlife Service (FWS) shows that only possible Federally listed transient individuals may exist in the proposed project area. Coordination with the State of New Hampshire's Fish and Game Department shows no State listed species occupy the area. (See letters in Appendix 3.)

6. Not applicable.

7. No adverse impacts to recreational resources will result from the proposed project.

8. Coordination with the FWS constitutes compliance with this Act.

9. Not Applicable.

10. Not Applicable.

11. No effect on significant cultural resources is anticipated since no change in pool elevation will occur. (See letter in Appendix 3.)

12. The preparation of this document constitutes compliance with this Act.

13. Not applicable.

14. The purpose of the project is to reduce regulation activities for control of water flow through the dam gates and to maintain a more constant pool.

15. Not applicable.

Compliance with Executive Orders

1. No significant alteration to the floodplain will result from the proposed project. Better control of flows through the dam will be gained.

2. Wetlands will benefit through the draining since new plant growth will be promoted, soils will be aerated, and acidic conditions will be reduced.

3. Not applicable.

X. References.

U.S. Army Corps of Engineers, December 1979. Edward MacDowell Lake Master Plan for Recreation Resources Development, Peterborough, New Hampshire.

U.S. Army Corps of Engineers, September 1984. Drought Contingency Storage Plan, Edward MacDowell Dam, Peterborough, New Hampshire.

U.S. Army Corps of Engineers, November 1981. Forest Management Plan (Master Plan Appendix B) and Fish and Wildlife Management Plan (Master Plan Appendix D), Edward MacDowell Lake, Peterborough, New Hampshire.

U.S. Army Corps of Engineers, November 1976. Environmental Assessment of the Operation and Maintenance of Edward MacDowell Lake, Nubanusit River, Peterborough, Hancock, Harrisville, and Dublin, New Hampshire.

Personal communication, Mr. Bill Ingham, March 15, 1985. New Hampshire Fish and Game Department, Concord, New Hampshire. Site visit March 28, 1985.

Technical Report D-77-17, Feasibility Study of General Crust Management as a Technique for Increasing Capacity of Dredged Material Containment Areas, October 1977. K.W. Brown and L.J. Thompson, Texas A&M Research Foundation/Texas A&M University, College Station, Texas 77843.

Technical Bulletin No. 247, A Manual of Marsh and Aquatic Vascular Plants of North Carolina with Habitat Data, February 1977. E.O. Beal, The North Carolina Agricultural Experiment Station, North Carolina.

APPENDIX 1

SECTION 404(b)(1) EVALUATION

NEW ENGLAND DIVISION
U.S. ARMY CORPS OF ENGINEERS, WALTHAM, MA
SECTION 404 (b) (1) EVALUATION

PROJECT: Edward MacDowell Dam - Weir Construction Project - West Peterborough, New Hampshire

PROJECT MANAGER: Mike Minior EXT. 331

FORM COMPLETED BY: Betty Parfenuk EXT. 536

PROJECT DESCRIPTION:

In order to better regulate water flow through the dam gates and to reduce the time and cost needed to operate the system, construction of a concrete intake weir with wooden stop logs has been proposed for this project. The wooden stop logs will be used to regulate flow through the dam gates. Incidental work includes construction of a temporary water diversion system. Sand bags will be used to control and channel flow during construction of the weir. This system will allow the discharge of all normal flows entering the reservoir. The project is scheduled for construction between July and September 1985. Construction activities may take from two weeks up to ten weeks.

Draining the MacDowell Lake is necessary to reduce adverse water quality impacts and to provide a dry site for weir construction. Surrounding wetlands will not be significantly affected by this action. The resulting stable impoundment will promote a better fishery.

NEW ENGLAND DIVISION
U.S. ARMY CORPS OF ENGINEERS, WALTHAM, MA

PROJECT: Edward MacDowell Dam - Weir Construction
Peterborough, New Hampshire

SHORT-FORM
Evaluation of Section 404(b)(1) Guidelines

1. Review of Compliance (Section 230.10(a)-(d)).

a. The discharge represents the least environmentally damaging practical alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for EA alternative): [X] YES [ ] NO

b. The activity does not appear to:
1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed endangered species or their habitat; and 3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies); [X] YES [ ] NO

c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see section 2): [X] YES [ ] NO

d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic system (if no, see section 5). [X] YES [ ] NO

Proceed to Section 2

*1/, 2/ See page 6

2. Technical Evaluation Factors (Subparts C-F).

	N/A	Not Significant	Significant
a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).			
1) Substrate impacts.		X	
2) Suspended particles/turbidity.		X	
3) Water column impacts.		X	
4) Alteration of current patterns and water circulation.		X	
5) Alteration of normal water fluctuations/hydroperiod.		X	
6) Alteration of salinity gradients.	X		
b. Biological Characteristics of the Aquatic Ecosystem (Subpart D).			
1) Effect on threatened/endangered species and their habitat.	X		
2) Effect in the aquatic food web.		X	
3) Effect on other wildlife (mammals, birds, reptiles, and amphibians).		X	
c. Special Aquatic Sites (Subpart E).			
1) Sanctuaries and refuges.		X	
2) Wetlands.		X	
3) Mud flats.		X	
4) Vegetated shallows.		X	
5) Coral reefs.	X		
6) Riffle and pool complexes.		X	
d. Human Use Characteristics (Subpart F).			
1) Effects on municipal and private water supplies.	X		
2) Recreational and Commercial fisheries impacts.		X	
3) Effects on water-related recreation.		X	
4) Aesthetic impacts.		X	
5) Effects on parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves.		X	

The Nubanusit Brook will be diverted during weir construction to abate water quality impacts. Wetlands should be benefited by the draining due to the opportunity to decrease acid conditions, aerate soil, and promote new plant growth. Waterfowl will benefit by gaining feeding grounds. The fishery should be improved because of the resulting pool stability.

Proceed to Section 3

*See page 6

3. Evaluation of Dredged or Fill Material (Subpart C).

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

1)	Physical characteristics	[X]
2)	Hydrography in relation to known or anticipated sources of contaminants	[X]
3)	Results from previous testing of the material in the vicinity of the project	[X]
4)	Known, significant sources of persistent pesticides from land runoff or percolation	[ ]
5)	Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances	[ ]
6)	Other public records of significant introduction of municipalities or other sources	[ ]
7)	Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	[ ]
8)	Other sources	[ ]

List appropriate references.

No dredging will take place. The weir will be placed on and adjacent to an existing concrete slab and wall. The materials used to fill the sand bags will be free of contaminants. There are no known contaminants in the reservoir area.

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to constraints. The material meets the testing exclusion criteria. [X] YES [ ] NO

Proceed to Section 4

*See page 6.

4. Disposal Site Delineation (Section 230.11(f)).

a. The following factors as appropriate, have been considered in evaluating the disposal site.

1)	Depth of water at disposal site	[X]
2)	Current velocity, direction, and variability at disposal site	[X]
3)	Degree of turbulence	[X]
4)	Water column stratification	[ ]
5)	Discharge vessel speed and direction	[ ]
6)	Rate of discharge	[ ]
7)	Dredged material characteristics (constituents, amount, and type of material, settling velocities)	[X]
8)	Number of discharges per unit of time	[ ]
9)	Other factors affecting rates and patterns of mixing (specify)	[ ]

List appropriate references.

The disposal site in this case refers to the sand bag dike placement area.

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.

YES	NO
[X]	[ ]

5. Actions To Minimize Adverse Effects (Subpart 11).

All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

YES	NO
[X]	[ ]

List actions taken.

Work will take place during the period of 15 July to 15 September 1985, to minimize impacts to fish and wildlife. These dates have been coordinated with the New Hampshire Fish and Game Department. While some fish will be destroyed during construction, the weir will ultimately result in less fluctuation of the pool. This, in conjuction with the state re-stocking program, will lead to an improved fisheries habitat. Draining MacDowell Lake will cause temporary, but minimal turbidity. The slow draining schedule will keep discharge velocity at a non-damaging level.

*See page 6

6. Factual Determination (Section 230.11).

A review of appropriate information as identified in items 2 - 5 above indicates that there is minimal potential for short or long term environmental effects of the proposed discharge as related to:

a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5 above). YES [X] NO [ ]

b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5). YES [X] NO [ ]

c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5). YES [X] NO [ ]

d. Contaminant availability (review sections 2a, 3, 4, and 5). YES [X] NO [ ]

e. Aquatic ecosystem structure and function (review sections 2a and c, 3, and 5). YES [X] NO [ ]

f. Disposal site (review sections 2, 4, and 5). YES [X] NO [ ]

g. Cumulative impact on the aquatic ecosystem. YES [X] NO [ ]

h. Secondary impacts on the aquatic ecosystem. YES [X] NO [ ]

7. Findings.

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines..... [ ]

b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions..... [X]

All work will be accomplished between 15 July and 15 September 1985, as coordinated with the New Hampshire Fish and Game Department. Summertime draining of the wetlands for a period of two weeks to ten weeks will not produce any significant adverse effects. Many beneficial results will occur as outlined previously (see page 2). The MacDowell Lake will be drained slowly over a period of three days in order to reduce siltation and associated turbidity. Fish and Game will be contacted at the time of the draining in case they wish to perform any beneficial enhancement work in the reservoir area while the pool is down.

*See page 6

c. The proposed disposal site for dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reasons:

1) There is a less damaging practicable alternative ..... ☐

2) The proposed discharge will result in significant degradation of the aquatic ecosystem..... ☐

3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem..... ☐

24 MAY '85
DATE

CARL B. SCIPLE
Colonel, Corps of Engineers
Division Engineer

FOOTNOTES

*A negative, significant or unknown response indicates that the proposed project may not be in compliance with the Section 404(b)(1) Guidelines.

1) Negative responses to three or more of the compliance criteria at this stage indicate that the proposed projects may not be evaluated using this "short form procedure". Care should be used in assessing pertinent portions of the technical information of items 2 a-e before completing the final review of compliance.

2) Negative response to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision making process, the "short form evaluation process is inappropriate".

APPENDIX 2

FINDING OF NO SIGNIFICANT IMPACT

FINDING OF NO SIGNIFICANT IMPACT

Construction of a concrete intake weir with wooden stop logs has been proposed to compliment the Edward MacDowell Dam located in Peterborough, New Hampshire. The intake weir will be used to regulate flow through the dam gates, thus reducing regulating time and expense. Sand bags will be used to keep water from entering the immediate construction area. The MacDowell Lake will be drained from two weeks to ten weeks during the July to September 1985, construction time frame.

The New Hampshire Fish and Game Department was coordinated with to select the construction period and to make use of their expertise on impacts to the existing fishery. The stable pool environment to result from weir construction will aid in increasing the quality of the fishery now present.

Wetland vegetation surrounding the impoundment will not be significantly impacted by the weir construction. In fact, enhancement of the habitat may result from draining the lake since acidic conditions will decrease, soils will be aerated, and new plant growth will be promoted. Waterfowl will also benefit through the exposure of mudflats. Wildlife will not be affected.

Noise and air pollution increases will be minimal and temporary. Current land use will not be impaired. Aesthetic qualities will not be hampered. Water quality will be protected since the dewatering will be done slowly to avoid siltation effects on turbidity. Weir construction will employ only clean materials while the lake is drained. No dredging will take place.

No known threatened or endangered species either Federally or State listed inhabit the project area. No major adverse alteration of the environment will result that may jeopardize the proposed project area's use by any transient individuals. Since the elevation of the permanent pool will remain unaltered by the weir installation, no significant cultural resources will be affected.

Mitigation includes temporarily improving feeding grounds for waterfowl during the dewatered period by seeding the area with plants used for food by waterfowl. This enhancement will be performed by the New Hampshire Fish and Game Department if able. Game fish will be stocked in the area in the spring or summer of 1986 to enhance the fishery's recovery.

There do not appear to be any major environmental problems, conflicts or disagreements in implementing the proposed work. Implementation of the proposed action will not have a significant impact on the human environment, and therefore, will not require an Environmental Impact Statement.

24 MAY 85
DATE

CARL B. SCIPLE
Colonel, Corps of Engineers
Division Engineer

APPENDIX 3

PERTINENT CORRESPONDENCE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J. F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203

May 14, 1985

Joseph L. Ignazio, Chief
Planning Division
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, MA 02254

Dear Mr. Ignazio:

In accordance with Section 176(c) and 309 of the Clean Air Act, and the National Environmental Policy Act, we have reviewed the Environmental Assessment, the Environmental Finding of No Significant Impact and Section 404(b)(1) Evaluation for the Edward MacDowell Intake Weir Construction, located in West Peterborough, Hillsborough County, New Hamsphire.

The project has been found to be satisfactory from the standpoint of environmental quality, health and welfare, within EPA's areas of jurisdiction and expertise.

Thank you for the opportunity to review the Environmental Finding of No Significant Impact.

Sincerely yours,

Elizabeth A. Higgins

Elizabeth A. Higgins, Assistant Director
for Environmental Review
Office of Government Relations
& Environmental Review (RGR-2203)

cc: Betty Parfenuk, Planning Division
Impact Analysis Branch, COE
Peter Holmes, EPA

NEW HAMPSHIRE DEPARTMENT of RESOURCES and ECONOMIC DEVELOPMENT

JOHN T. FLANDERS
COMMISSIONER

TELEPHONE: 603-271-2411

May 8, 1985

Joseph L. Ignazio, Chief
Planning Division
Impact Analysis Branch
New England Division
Corps of Engineers
Department of the Army
424 Trapelo Road
Waltham, Massachusetts 02254

Re: Proposed Weir/Edward MacDowell Lake/Peterborough, New Hampshire

Dear Mr. Ignazio:

As required by the National Historic Preservation Act and federal Advisory Council on Historic Preservation "Procedures for the Protection of Historic and Cultural Properties" (36 CFR 800), the New Hampshire State Historic Preservation Office has reviewed the above referenced project for potential effects on properties listed, or eligible for listing, in the National Register of Historic Places.

Based upon the information currently available, including the site visit by Dr. Gary W. Hume, State Archeologist, it has been determined that the project as proposed will have no effect on known architectural, historical, archeological, and cultural resources. No other such resources with integrity are expected to occur within the project area and no identification or evaluative studies are recommended.

Should other such resources be discovered as a result of project planning or implementation, the State Historic Preservation Office is to be consulted on the need for appropriate evaluative studies, determinations of National Register eligibility, and mitigative measures (redesign, resource protection, or data recovery) as required by federal law and regulations.

For the purpose of compliance with Advisory Council on Historic Preservation Procedures (36 CFR 800), I request that this determination be construed as a finding of "No Properties in the Impact Area."

Sincerely,

John T. Flanders, Commissioner
Department of Resources and Economic Development
NH State Historic Preservation Officer

JTF:GWH:g

P.O. BOX 856 . . . CONCORD, N.H. 03301

105 LOUDON ROAD

STATE OF NEW HAMPSHIRE

FISH AND GAME DEPARTMENT

CHARLES E. BARRY
EXECUTIVE DIRECTOR

Box 2003
34 Bridge Street
Concord, N. H. 03301
(603) 271-3421

April 11, 1985

Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

Attention: Planning Division
Impact Analysis Branch

Dear Sirs:

In regard to your questions concerning endangered and threatened wildlife species use of the MacDowell Dam area in West Peterborough, please be advised that the proposed intake weir construction project should not have any impact on New Hampshire's listed endangered and threatened wildlife species.

Enclosed is a copy of our endangered species program brochure which includes a list of the current threatened and endangered species. A revision of the list is currently underway - the new list should be finalized sometime in mid July.

Sincerely yours,

Charles E. Barry

Charles E. Barry
Executive Director

fm

STATE OF NEW HAMPSHIRE

FISH AND GAME DEPARTMENT

CHARLES E. BARRY
EXECUTIVE DIRECTOR

Box 2003
34 Bridge Street
Concord, N. H. 03301
(603) 271-3421

April 1, 1985

Miss Betty Parfenuk, Biologist
Planning Division, IAB
Department of the Army
Corps of Engineers, NED
424 Trapelo Road
Waltham, Massachusetts 03354

Dear Miss Parfenuk:

Thank you for the opportunity on March 28th to review the U. S. Army Corps of Engineers proposal to install a weir in the flood control dam at the MacDowell Reservoir on Nubanusit Brook in Peterborough. The weir will allow automatic reservoir level control versus the present day to day manual gate control. The New Hampshire Fish and Game Department is providing comments pursuant to the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.) and N.H. RSA 206:9 and 206:10.

The proposal to install the weir will require the draining of the reservoir and the present fisheries and wildlife habitat for a period of about two months. In order to provide some protection to resident nesting waterfowl and other species, the Fish and Game Deparemtent recommends that the draining and associated construction take place during late summer and/or early fall. Although the resident fish populations will be adversely impacted by the draining, stockings of game fish, such as bass and pickerel, in the spring or summer of 1986 will enhance their recovery.

I would suggest you contact Biologist Edward Robinson at this office (603)-271-2462 to discuss possible waterfowl habitat enhancement when the reservoir is drained. Also, during the later stages of reservoir draining some type of silt barrier should be installed at the dam (such as a hay bale dam) to reduce siltation to the brook from erodible silt deposits in the reservoir.

If the above recommendations are carried out there should be little impact on fish and wildlife. The installation of a weir to maintain stable water levels should benefit fish and wildlife.

If you have any further questions, please contact staff Ecologist William C. Ingham, Jr. (603)-271-2502.

Sincerely yours,

Charles E. Barry

Charles E. Barry
Executive Director

CEB:WCI:emb
cc: Gordon Beckett, USF&WS
Charles F. Thoits
Jeffrey M. Gray
William C. Ingham, Jr.
George R. Morrison
Carl Lacaillade
Edward Robinson

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. BOX 1518
CONCORD, NEW HAMPSHIRE 03301

Mr. Joseph L. Ignazio
Chief, Planning Division
Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254

MAR 5 1985

Dear Mr. Ignazio:

This responds to your February 26, 1985 request for information on the presence of Federally listed and proposed endangered or threatened species in conjunction with your proposed Hydropower Reconnaissance Study at the Edward McDowell Lake in West Peterborough, New Hampshire.

Our review shows that except for occasional transient individuals, no Federally listed or proposed species under our jurisdiction are known to exist in the project impact areas. Therefore, no Biological Assessment or further consultation is required with us under Section 7 of the Endangered Species Act. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to endangered species under our jurisdiction. It does not address other legislation or our responsibilities under the Fish and Wildlife Coordination Act.

A list of Federally designated endangered and threatened species in New Hampshire is enclosed for your information. Thank you for your cooperation and please contact us if we can be of further assistance.

Sincerely yours,

Gordon E Beckett

Gordon E. Beckett
Supervisor
New England Field Office

Enclosure

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN NEW HAMPSHIRE

Common Name	Scientific Name	Status	Distribution
FISHES:			
Sturgeon, shortnose*	Acipenser brevirostrum	E	Atlantic Coastal waters
REPTILES:			
Turtle, leatherback*	Dermochelys coriacea	E	Oceanic summer resident
Turtle, loggerhead*	Caretta caretta	T	Oceanic summer resident
Turtle, Atlantic ridley*	Lepidochelys kempii	E	Oceanic summer resident
BIRDS:			
Eagle, bald	Haliaeetus leucocephalus	E	Entire state - migratory
Falcon, American peregrine	Falco peregrinus anatum	E	Entire state - re-establishment to former breeding range in progress
Falcon, Arctic peregrine	Falco peregrinus tundrius	E	Entire state Migratory - no nesting
MAMMALS:			
Cougar, eastern	Felis concolor cougar	E	Entire state - may be extinct
Whale, blue*	Balaenoptera musculus	E	Oceanic
Whale, finback*	Balaenoptera physalus	E	Oceanic
Whale, humpback*	Megaptera novaeangliae	E	Oceanic
Whale, right*	Eubalaena spp. (all species)	E	Oceanic
Whale, sei*	Balaenoptera borealis	E	Oceanic
Whale, sperm*	Physeter catodon	E	Oceanic
MOLLUSKS:			
NONE			
PLANTS:			
Robbins cinquefoil	Potentilla robbinsiana	E	Coos County
Small Whorled Pogonia	Isotria meleoloides	E	Belknap, Strafford, Merrimack, Grafton, Carroll, Rockingham Counties

* Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service

Rev. 11/1/82